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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/473,495	12/28/1999	TETSUYA ATSUMI	M2009-13	1052

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EXAMINER	
FISCHER, JUSTIN R	

ART UNIT	PAPER NUMBER
1733	13

DATE MAILED: 12/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/473,495	Applicant(s) ATSUMI ET AL.	
	Examiner Justin R Fischer	Art Unit 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 November 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (US 3,646,610, of record) in view of Sugiyama (JP 08131588, of record), Kusumoto (US 6,106,413, of record), Berg (US 5,984,804), the Admitted Prior Art (Page 1, Lines 18-25), Lauraitis (US 4,000,896, newly cited), and Van Auken (US 4,023,801, newly cited). Jackson, Sugiyama, Kusumoto, Berg, and the Admitted Prior Art are applied in the same manner as set forth in Paper Number 9, Paragraph 5.

As stated in Paper Number 9, Paragraph 5 and Paper Number 6, Paragraph 2 and best depicted in Figure 17, Jackson discloses a method of making a golf club shaft comprising a first angled layer (62'), a first straight layer (66'), a second angled layer (68'), and a second straight layer (72'). The reference, however, fails to suggest a first and second reinforcement layer in accordance to the limitations of the claimed invention to define an innermost and outermost layer on the mandrel, respectively, and further fails to expressly describe the angled layers as being bonding together prior to being wrapped. Regarding the first (innermost) reinforcement layer, Sugiyama is directed to a golf club shaft comprising a first reinforcement layer formed of perpendicular reinforcing elements (with respect to longitudinal axis), a first straight layer, and a first angled layer

and suggests that a first reinforcement layer is especially important in proximity to a first straight layer in order to prevent separation and optimize flexural rigidity (Abstract). Thus, it would have been obvious to include a first reinforcement in the shaft of Jackson in view of Sugiyama to obtain the aforementioned benefits, it being emphasized that the first reinforcement layer is specifically designed to be included adjacent a longitudinal reinforcement layer, as is contained in Jackson. Regarding the second reinforcement layer, it would have been within the purview of one of ordinary skill in the art at the time of the invention to include such a layer in the assembly of Jackson, since such layers are commonly used to reinforce the end portion of golf club shafts in an analogous manner to that required by the claimed invention (depicted in Figure 5 by applicant), as evidenced by Kusomoto (Column 13, Lines 11-15). With respect to the formation of the angled layers of Jackson, although the reference suggests that the glass fibers are interlaced or braided, it is well known in the golf club art that such layers can be alternatively formed in an overlapping fashion, as evidence by Berg (Column 4, Lines 54-65), and in view of the Admitted Prior Art, which discloses (a) the conventional use of bonding individual prepegs to form angled layers (analogous to overlapping pattern) and (b) the conventional use of wrapping individual prepegs layers from sheet form, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the straight layers and angled layers in accordance to the limitations of the claimed invention, as set forth below. Lastly, Lauraitis (Column 1, Lines 60-65) and Van Auken (Column 3, Lines 59-65) have been provided to support the examiner's previous

position that a thickness of between 0.04 and 0.1 millimeters defines a broad and conventional range for the thickness of the second angled layer.

The golf club shaft of Jackson, as depicted in Figure 17, contains a first angled layer, a first straight layer, a second angled layer, and a second straight layer. It should be noted that an additional reinforcement layer or straight layer (60') is also present in this embodiment. Although Jackson does not specifically describe a first and second reinforcement layer, the reference does state, "other and additional layers could be incorporated into the shaft" (Column 2, Lines 60-62). Thus, in view of Jackson and conventional golf club shaft technology, one of ordinary skill in the art at the time of the invention would have been motivated to include a first and second reinforcement layer, as previously mentioned. In particular, Sugiyama describes the benefits of optimized flexural rigidity and decreased separation when a first reinforcement layer is positioned inward and adjacent an innermost straight layer, which is the exact configuration of Jackson. Also, the use of a second reinforcement layer to define an outermost layer is extremely well known and conventional, it being noted that Kusomoto and the applicant describe the same second reinforcement layer in the grip portion to reinforce the end portions.

Regarding the formation of the angled layers, Jackson suggests that the fibers are interlaced or braided. Berg, however, suggests that angled layers can be formed by one of two methods: interlacing/braiding or forming an overlapping pattern. Thus, one of ordinary skill in the art at the time of the invention would have readily appreciated the formation of angled layers in Jackson by overlapping a plurality of fibers since such a

method is recognized as defining an equivalent and alternative means to form angled layers in golf club shafts. The claimed invention, however, requires that materials (first and second fibers) used to form the angled layers are initially bonded and subsequently wrapped around the mandrel. Although the combination of Jackson and Berg suggest a spiral wrapping of first fiber material followed by a spiral wrapping of second fiber materials and subsequent bonding, the Admitted Prior Art recognizes the conventional use of bonding prepegs layers prior to wrapping in order to form angled layers. This method forms a similar product to that of Jackson in view of Berg in that the first and second materials of the Admitted Prior Art are oriented in an overlapping fashion. One of ordinary skill in the art at the time of the invention would have recognized the method described by the Admitted Prior Art as an equivalent alternative, which eliminates the complicated processing associated with spiral winding or interlacing/braiding. Also, with respect to the formation of the straight layers, the Admitted Prior Art describes the conventional use of wrapping prepegs layers as an alternative to spirally wrapping fiber materials (Page 1, Lines 9-17). Thus, in view of the Admitted Prior Art, one of ordinary skill in the art at the time of the invention would have recognized the formation of all the layers of Jackson by wrapping prepeg layers since this method represents a well-known and conventional means to manufacture golf club shafts.

Lastly, regarding the angle of the second angled layer, it is evident from Figure 17 that the angled layers of Jackson (62' and 68') are defined by the intersection of fiber materials at a large angle (appears to be roughly 90°). Furthermore, one of ordinary skill in the art at the time of the invention would have readily appreciated the range of

the claimed invention (70°-150°) as being broad and conventional, as evidence by Berg (Column 4, Lines 54-65).

3. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art (Page 1, Lines 9-24) in view of Jackson, Sugiyama, Kusumoto, Lauraitis, and Van Auken. Jackson, Sugiyama, Kusumoto, Berg, and the Admitted Prior Art are applied in the same manner as set forth in Paper Number 9, Paragraph 5.

The Admitted Prior Art discloses a well-known and conventional method of forming golf club shafts in which reinforcing fibers are lined up in a "one-directional" pre-impregnation and subsequently wrapped around a tapered mandrel. Furthermore, the Admitted Prior Art describes the specific formation of angled layers by bonding individual layers of angled fibers. However, the Admitted Prior Art is silent with respect any specific configuration of straight and angled layers. Jackson, as best depicted in Figure 17, is directed to a golf club shaft comprising a first angled layer, a first straight layer, a second angled layer, and a second straight layer and further states that additional layers can be incorporated into the shaft (Column 2, Lines 60-67). Regarding the claimed first and second reinforcement layers, Sugiyama and Kusomoto suggest the use of these layers, respectively, to optimize flexural rigidity and reinforce the grip portion of the shaft. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to form a golf club shaft with the claimed six layer structure of Jackson in view of Sugiyama and Kusomoto by wrapping straight layers and bonded angled layers in a conventional method, in view of the Admitted Prior Art, as set forth below. Also, Lauraitis (Column 1, Lines 60-65) and Van Auken (Column 3, Lines

59-65) have been provided to support the examiner's previous position that a thickness of between 0.04 and 0.1 millimeters defines a broad and conventional range for the thickness of the second angled layer.

The Admitted Prior Art specifically describes the use of prepeg layers to form straight layers and the use of individually bonded layers to form angled layers. The Admitted Prior Art, however, is silent with respect to any specific combination of straight and angled layers, only providing a general description of conventional techniques used in the manufacture of golf club shafts. However, one of ordinary skill in the art at the time of the invention would have readily appreciated the six layer structure of the claimed invention in view of Jackson, Sugiyama, and Kusomoto. Jackson describes a golf club shaft formed of first and second angled layers and first and second straight layers in order to provide adequate shear strength and strength with respect to lateral bending of the shaft and the application of torsional forces. The first and second reinforcement layers of the claimed invention, though not mentioned by Jackson, are well known to optimize the flexural rigidity and reinforce the grip end portion of the shaft, respectively, as evidenced by Sugiyama and Kusomoto. In particular, Sugiyama suggests the importance of a first reinforcement layer inward of a first straight layer, which is the identical configuration of Jackson. Also, the claimed second reinforcement layer is depicted as extending over the grip end portion in an analogous manner to that depicted by Kusomoto. Thus, the use of a first and second reinforcement layer in Jackson would have been readily appreciated by one of ordinary skill in the art at the time of the invention.

The Admitted Prior Art, which describes the same manufacturing techniques of the claimed invention, is silent with respect to any combination of angled and straight layers. As set forth above, the combination of Jackson, Sugiyama, and Kusomoto suggest the same six layer structure of the claimed invention, it being noted that Jackson specifically suggests the use of other and additional layers. Therefore, one of ordinary skill in the art at the time of the invention would have readily appreciated the six layer structure of Jackson, Sugiyama, and Kusomoto in the method detailed by the Admitted Prior Art since the six layer structure provides great shear, torsional, and lateral bending strength, improved flexural rigidity, and optimized reinforcement in the grip portion.

Response to Arguments

4. Applicant's arguments filed November 6, 2002 have been fully considered but they are not persuasive. Applicant provides the following arguments: the shaft assembly of Jackson in view of Sugiyama would include a straight layer intimately surrounding an inner hoop reinforcement layer and Jackson teaches away from forming an angled layer by bonding fibers prior to wrapping the angle layer around the mandrel as required by the claimed invention.

In response to applicant's first argument, it is acknowledged by the examiner that the shaft assembly of Jackson in view of Sugiyama results in an innermost hoop layer (first reinforcement layer) surrounded by a straight layer, which in turn is surrounded by a first angled layer. The claims as presently drafted, however, do not exclude the

existence of a straight layer between the innermost hoop layer and the first angled layer.

In response to applicant's second argument, it is recognized by the examiner that the angled layers of Jackson are interlaced or braided around the mandrel and subsequently cured. As set forth in the rejection above, Berg suggests that it is well known to either interlace/braid fibers or overlap fibers when forming reinforcement layers in golf club shafts. Thus, the combination of Jackson and Berg suggest a spiral wrapping of a first fiber material followed by a spiral wrapping of a second fiber material and subsequent bonding, which forms an overlapping or crossed relationship between said first and second fiber materials. The Admitted Prior Art further recognizes that overlapped or crossed fiber materials can alternatively be formed by bonding individual prepeg layers and as such, one of ordinary skill in the art at the time of the invention would have found it obvious to form the angled layers of Jackson in accordance to the limitations of the claimed invention since such a method would eliminate the complicated processing associated with spiral winding or interlacing/braiding.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(703) 605-4397**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Justin Fischer

December 20, 2002

Michael W. Ball
Supervisory Patent Examiner
Technology Center 1700